

Serial No. 10/725,326

CLAIM AMENDMENTS:

1-30. (Canceled)

31. (Currently Amended) A method of forming a trench DMOS transistor device comprising:

providing a substrate of a first conductivity type, said substrate acting as a common drain region for said device;

depositing an epitaxial layer of said first conductivity type over said substrate, said epitaxial layer having a lower majority carrier concentration than said substrate;

forming a body region of a second conductivity type within an upper portion of said epitaxial layer;

etching a trench extending into said epitaxial layer from an upper surface of said epitaxial layer;

forming an insulating layer lining at least a portion of said trench;

forming a low resistivity deep region of said first conductivity type below a portion of said trench, the deep region extending from an upper surface of the epitaxial layer into the substrate, said deep region acting to provide electrical contact with said substrate;

forming a conductive region within said trench adjacent said insulating layer; and forming a low resistivity deep region extending into said device from an upper surface of said epitaxial layer, said deep region acting to provide electrical contact with said substrate; and

forming a source region of said first conductivity type within an upper portion of said an upper portion of said body region and adjacent said trench, wherein said step of forming a source region also forms a region of first conductivity within the low resistivity deep region- epitaxial layer over the deep region, wherein the source region within the upper portion of said epitaxial layer completely overlies the deep region.

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32. (Previously Presented) The method of claim 31, wherein the region of first conductivity formed within the low resistivity deep region is formed by implantation and diffusion.